

A Review of *Polygonia progne (oreas)* and *P. gracilis (zephyrus)* (Nymphalidae), including a new Subspecies from the Southern Rocky Mountains

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Abstract. *P. progne* and its subspecies *oreas* and *silenus* have differently-shaped gnathos and tegumen, and have blacker undersides of their wings, than have *P. gracilis* and its subspecies *zephyrus*. A new subspecies of *P. progne* is described from the Southern Rockies, characterized by the underside and abdomen structures of *progne* and *oreas*, the upperside of *P. gracilis zephyrus*. The new subspecies is uncommon and has only one generation, versus two in *zephyrus*. Larvae of *P. progne* subspecies eat gooseberry, rarely currant, whereas larvae of *P. gracilis* subspecies eat currant. An interesting convergence is shown to affect the wing pattern in many species of *Polygonia* and one species of *Asterocampa*, which deserves further study. A synopsis of Nearctic *Polygonia* is given.

Introduction

Brown et al. (1957) correctly listed the presence of *P. progne* (as *P. silenus*) in Colorado, illustrating a female and describing a male which represent the subspecies described herein (both are figured in the present Figs. 1-2). Brown was somewhat doubtful about their identity, and all other authors writing on the southern Rockies fauna have assumed that Colorado-Utah-Wyoming-southern Montana *progne* or *oreas* are just dark variants of *P. zephyrus*. Thus Ferris et al. (1981) illustrated the underside of the *P. progne* subspecies described below, yet treated it as a "brown form" of *zephyrus*. The present paper documents the presence of this new Southern Rockies subspecies of *progne*, resembling *progne* and *oreas* on the underside, and *zephyrus* on the upperside. The paper clarifies the confusion that has surrounded *Polygonia progne*, *oreas*, *gracilis*, and *zephyrus*. For instance C. dos Passos and P. Ehrlich (in Ehrlich and Ehrlich, 1961) combine *P. oreas* and *zephyrus* into one species, and treat *progne* and *gracilis* as distinct species. The wing pattern intergradation between *P. gracilis* and *P. gracilis zephyrus* led me to investigate the species ranges and morphology.

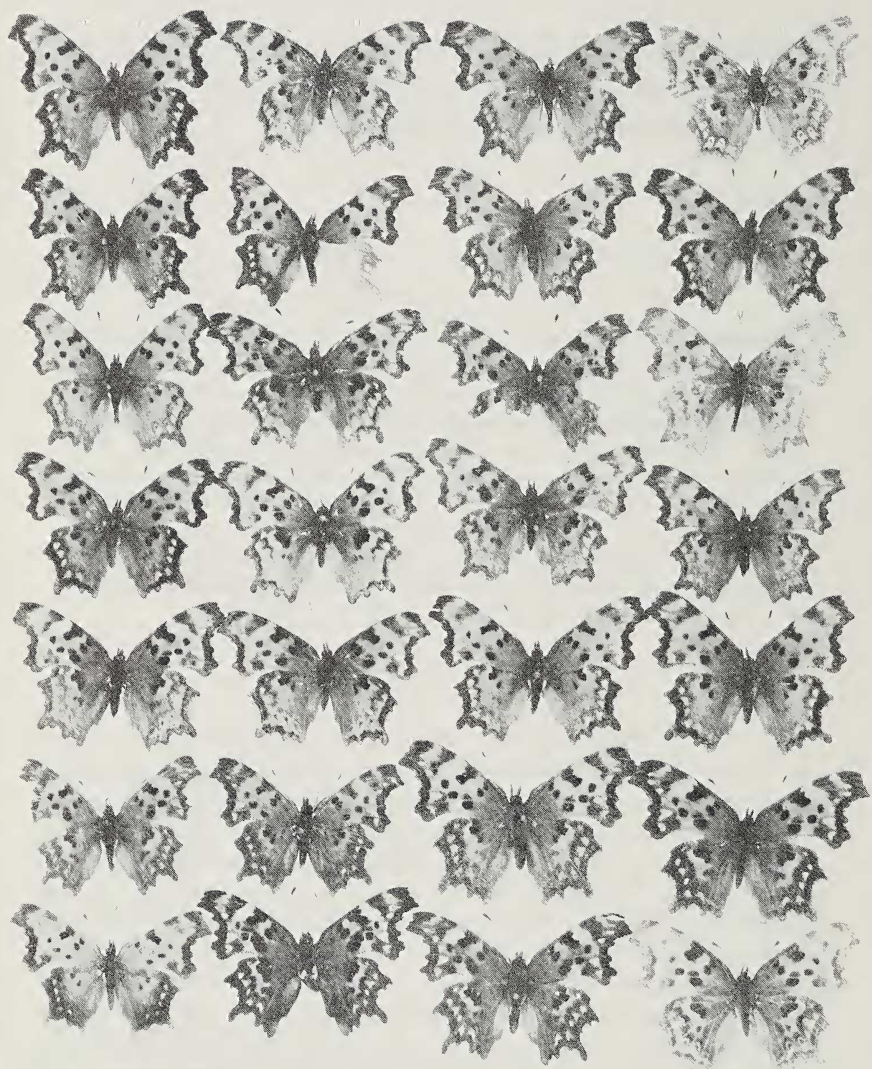
**Figure 1**



Figure 2

Fig. 1. Rows 1-5 are types of *nigrozephyrus* (paratypes unless stated, in the collection of the collector unless stated otherwise). **First Row** males: Gregory Cany., 6200', Boulder Co. Colo. 4 Aug. 67 Ray E. Stanford (RES); Woodmen Valley, 7000', El Paso Co. Colo. 10 July 77 James A. Scott (JAS); Gregory Can. 1 May 66 JAS; Williams Canyon, 7400', El Paso Co. Colo. 11 Aug. 71 JAS; **Second Row** males: Indian Creek Campground, 7300', Douglas Co. Colo. 16 Aug. 69 RES; Cheyenne Mtn., 9400', El Paso Co. Colo. 5 Aug. 31 F. Martin Brown (FMB) in Univ. Colo. museum (CU), (right hw scales rubbed off many years ago to study venation), this male discussed by Brown et al. 1957, who list its altitude as 9000'; Lump Gulch near Rollinsville, 8500', Gilpin Co. Colo. 7 Sept. 28 Hugo Rodeck, holotype, in CU museum; Indian Creek Campground 16 Aug. 67 RES; **Third Row** males: Flagstaff Mtn., 6900', Boulder Co. Colo. 1 June 73 RES; Wild Cherry Creek, 8700', Sangre de Cristo Mts., Saguache Co. Colo. 16 Aug. 74 JAS; Twin Lakes, 9500', Lake Co. Colo. 18 Aug. 52 FMB, in CU museum (abdomen missing); Bruce's Spruce Camp, 9000', San Juan River, [Mineral Co.] Colo. 27 May 39 FMB, in CU museum; **Fourth Row** females: Williams Can. 11 Aug. 71 JAS; stream at NW edge of Minturn, 7900', Eagle Co. Colo. 22 Aug. 69 JAS; Wild Cherry Creek 29 May 72 JAS; Flagstaff Mtn. 14 April 65 JAS; **Fifth Row** females: Bavarian Lodge, 8500', Aspen, Pitkin Co. Colo. 18 Aug. 37 FMB, allotype, in CU museum, figured as "silenus" by Brown et. al. 1957; Woodmen Valley 19 July 75 Michael Fisher, in JAS coll.; near Deckers, 6400', Douglas Co. Colo. 18 May 69 RES; Indian Creek Campground 12 Aug. 72 RES; **Sixth Row**: Tilden Regional Park, Contra Costa Co. Calif. 13 April 68 male *oreas*, Paul A. Opler; Halfmoon Park, Crazy Mts., Sweetgrass Co. Mont. 16 Aug. 66 male *oreas*, JAS; same, female; Miller Creek, Missoula Co., Mont. 15 Sept. 83 female near *oreas*, Steven J. Kohler; **Seventh Row**: Minneapolis, Minn. 25 Aug. 65, female *progne*; Cameron Lake, S. Vancouver Isd., B.C. 6 Aug. 51 male *silenus*, Richard Guppy (RG), in CU museum; Errington, Vancouver Isd., B.C. 18 April 52 male *silenus*, RG, in CU museum; Wellington, S. Vancouver Isd., B.C. 8 Aug. 51 female *silenus*, RG, in CU museum.

Fig. 2. Undersides of adults in Fig. 1, in same positions.

Genitalic Characters

I found that both *P. gracilis* and its subspecies *zephyrus* have a longer and thinner gnathos and a slightly more rectangular anterior margin of the tegumen, whereas *P. progne* and its subspecies *oreas*, *silenus*, and the new subspecies have a much shorter, wider, more elbowed gnathos and a slightly more rounded tegumen (Figs. 3-4). The two species are very different in structure, and no hybrids between *P. gracilis* and *P. progne* have been found. Brushing the abdomen tip of males (and sometimes removing the abdominal shell above the genitalia) exposes the genitalia sufficiently for identification (and brushing the tip is usually required even to determine the sex, because wing shape and abdomen volume are unreliable for

sex determination). The only intraspecies variation found is in the valva of male *P. progne progne*, which often has a smaller dorsal notch, but this trait is too variable for use in identification. Female genitalia did not prove useful for identification.

Polygonia progne

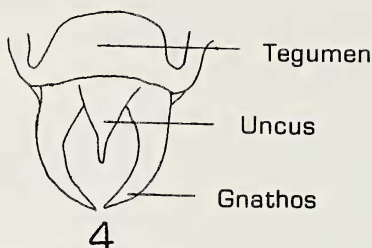
Using these male genitalic traits, I examined all of the available adults having a blackish-gray underside, and found every male to be genitically *progne*, not *gracilis zephyrus*. The Southern Rockies *progne* were found to be a new subspecies, described as follows:

Polygonia progne nigrozephyrus J. Scott, new subspecies

The subspecies is characterized by a dark (blackish-gray, not "brown") underside as in subspecies *progne* and *oreas*, and a dorsal hindwing resembling *P. g. zephyrus* in having very large yellow submarginal spots (Table 1). All the known adults have large submarginal yellow spots on dorsal hindwing as in *zephyrus*, except a male from Cheyenne Mountain (Fig. 1) which is somewhat similar to subspecies *progne*. Black dorsal spots vary greatly in size in *nigrozephyrus* (Fig. 1). *P. p. nigrozephyrus* differs from *P. g. zephyrus* in the generally darker underside (some adults are fairly similar), the male genitalia, the single brood, and in hostplants (Table 2). Subspecies *nigrozephyrus* has one yearly generation in Colorado (emerging late July and August, overwintering, then flying, mating, and laying eggs through May) as have *oreas* and *silenus* in the rest of the west (except two generations occur in lowland California *oreas*), whereas *P. g. zephyrus* has two generations at least at low altitude in Colorado (late June-early August, then September overwintering to May; Scott and Scott, 1980). *P. progne progne* has two generations except in northern Canada; *P. g. gracilis* has one generation. The new subspecies occurs from 5800-9500 feet (1800-2900 m) altitude, in Transition and Canadian Zones, in habitats with fairly open forest of pines (Ponderosa or Lodgepole, sometimes also Pinyon) and sometimes Douglas fir and Aspen, and various shrubs (even oak), the habitats dry to fairly moist.

The name *nigrozephyrus* is assigned because most persons have assumed that the adults are merely "dark *zephyrus*".

There are 29 types (19 male, 10 female). All were examined, including the genitalia of all males except the one paratype with abdomen missing. Holotype male Lump Gulch, Gilpin Co., Colo., 7 Sept. 1928, Hugo Rodeck, in University of Colorado museum. The holotype, allotype, and most paratypes are figured in Figs. 1-2 and their localities and repositories listed in the legends. The remaining paratypes are: Sugar Creek near Deckers, 7500-8000', Douglas Co., Colorado, 16 Aug. 1970, 1 paratype male, Mike Fisher (in M. Fisher collection); foot of Lookout

Polygonia progne**Polygonia gracilis**

Figs. 3 & 4. Dorsal view of male genitalia of *P. progne* (*oreas*, *silenus*, *nigrozephyrus* similar) and *P. gracilis* (and *zephyrus*).

Mountain, 6100', Golden, Jefferson Co., Colorado, 25 March 1972, 1 paratype female, Donald E. Bowman (J. Scott collection); Surface Creek, 8 miles northeast of Cedaredge, Delta Co., Colorado, 7500', Richard L. Klopshinske, 28 Aug. 1983, 1 male, 1 female paratypes in RLK collection, 3 male paratypes in J. Scott collection, 1 Sept. 1983, 1 male paratype in J. Scott collection; West Creek, 9 miles northeast Gateway, Unaweep Canyon, Mesa Co., Colorado, 5800', 11 Sept. 1983, R. L. Klopshinske, 1 paratype male in RLK collection.

Additional localities for *P. p. nigrozephyrus* are: Lambs Canyon Branch of Parleys Canyon, east of Salt Lake City, 7000', Salt Lake Co., Utah, 28 Aug. 1898, 1 male, G. Wesley Browning (genitalia borrowed and examined; wings typical of *nigrozephyrus* with large yellow dorsal hind-wing submarginal spots, Clyde F. Gillette written communication); west slope Sierra Madre Mountains, Carbon Co., Wyoming, 18 July 1977, C. Ferris (underside figured by Ferris and Brown eds. 1981, but upperside and genitalia not seen). In addition, a female from City Creek Canyon, Salt Lake Co., Utah, 25 Aug. 1929, Dr. John W. Sugden, was not seen but is described as *nigrozephyrus* by C. Gillette. *P. p. nigrozephyrus* seems limited to mountainous Colorado, Utah, southern Wyoming, and probably northern New Mexico.

The ranges of other *P. progne* subspecies in the Rocky Mountains were clarified somewhat. Adults from Converse County Wyoming ("several specimens from Converse Co. were determined as *progne* by C. F. dos Passos", Ferris, 1971) and Bighorn Mountains Wyoming ("*progne*", Macy and Shepard, 1941) probably are *P. p. progne*, or perhaps are *P. p. progne-oreas* intermediate populations. *P. p. oreas* (type locality California, Brown, 1967; hereby restricted to Contra Costa Co.) occurs from central coastal California (Monterey, San Francisco, Alameda, Contra Costa, Marin, Sonoma Cos.) and northern California (Plumas and Sis-

Table 1. Differences between *P. progné* and *gracilis* subspecies. UPF, dorsal forewing; UPH, dorsal hindwing; UNH, ventral hindwing.

	<i>stienus</i>	<i>oreas</i>	<i>nigrozephyrus</i>	<i>progné</i>	<i>zephyrus</i>	<i>gracilis</i>
Wing Shape	slightly more ragged than <i>oreas</i>	normal	normal	normal, but fw sometimes more produced	normal, but fw sometimes more produced	normal
Size of median black UPF spots beyond discal cell	very large cell CuA ₂ ; large cell CuA ₁ ; absent or large cell M ₃	large (rarely small) CuA ₂ ; small to large CuA ₁ (rarely just trace)	large to small CuA ₂ ; absent to large CuA ₁	very small or small in cell CuA ₂	small (rarely large) CuA ₂ ; absent or trace CuA ₁	small (rarely very small or large) in CuA ₂ ; sometimes a trace or small CuA ₁
Size of other black UPF and UPH spots	very large	usually large	variable, large to small	very small, sometimes small	small	small
Submarginal yellow spots in brown UPH border	small, rarely large	small, rarely large or very small	large, often very large, rarely small	very small	large, often very large, rarely small	very small, sometimes small
Width of brown UPH border	normal	normal	normal	normal (winter), half wing width (summer), usually blended	normal	normal, sometimes wider and blended into orange
Color of wing undersides	nearly black male, blackish-gray female, russet edge & lines	blackish-gray	blackish-gray	blackish-gray	gray, rarely nearly blackish-gray	blackish-gray, but postmedian area whitish
UNH lower arm silvery comma	long (2 mm)	long, sometimes very short	usually short, sometimes long or absent	absent, sometimes moderate or long	moderate (rarely absent or long)	moderate
Thorax color ventrally	blackish male, blackish-gray female	dark gray	gray (sometimes dark gray)	gray (sometimes dark gray)	gray	gray
Leg color (tibia and tarsus)	white	whitish-gray	whitish-gray to gray	gray (rarely whitish-gray)	gray or whitish-gray	whitish-gray

Table 2. Hostplants of *Polygona progne* and *P. gracilis*¹⁷

Polygona progne	Polygona gracilis
progne	gracilis
<i>Ribes</i> (<i>Grossularia</i>) <i>rotundifolium</i> Michx. ¹ (Grossulariaceae)	<i>Ribes</i> (<i>Ribes</i>) <i>triste</i> Pallas ¹⁰
<i>R.</i> (<i>Grossularia</i>) <i>missouriense</i> Nutt. ²	<i>R.</i> (<i>Ribes</i>) <i>glandulosum</i> Graver ¹⁰
<i>R.</i> (<i>Grossularia</i>) "wild gooseberry" ³	<i>Ribes</i> "wild currant" ¹¹
<i>Ribes</i> "currant" ⁴	
<i>Rhododendron nudiflorum</i> (L.) Torr. ⁵ (Ericaceae)	zephyrus
<i>Betula papyrifera</i> Marsh. ⁶ (Betulaceae)	
oreas	<i>Ribes</i> (<i>Ribes</i>) <i>cereum</i> Dougl. ¹²
	<i>R.</i> (<i>Grossularioides</i>) <i>montigenum</i> McClatchie ¹³
	<i>R.</i> (<i>Grossularioides</i>) <i>lacustre</i> (Pers.) Poir. ¹⁴
<i>Ribes</i> (<i>Grossularia</i>) <i>divaricatum</i> Dougl. ⁷	<i>Ribes</i> "wild currant" ¹⁵
<i>Ribes</i> species with spiny fruits and stems (not <i>divaricatum</i>) ⁸	<i>Menziesia glabella</i> (Gray) Calder & Taylor ¹⁴ (Ericaceae)
	<i>Rhododendron occidentale</i> (Torr. & Gray) Gray ¹⁶ (Ericaceae)
silenus	
<i>Ribes</i> (<i>Grossularia</i>) <i>divaricatum</i> ⁹	

Citations

- 1 S. Scudder 1889, Butterflies of Eastern United States and Canada. Cambridge, Massachusetts.
- 2 Only hostplant in Missouri, J. Richard Heitzman, written communication.
- 3 Quebec, F. Caulfield 1875, Can. Ent. 7:49; Virginia, C. Wood Jr. and C. Gottschalk 1942, Ent. News 53:143, 159, 191.
- 4 Illinois, W. Le Baron, and Ontario, W. Saunders 1884 Can. Ent. 16:181, both cited by Scudder 1889¹.
- 5 Pennsylvania, A. Shapiro 1966, Butterflies of the Delaware Valley. Special Publication American Entom. Society.
- 6 Ontario, J. Fletcher 1892, Can. Ent. 24:265.
- 7 California: J. Emmel 1969 Lepid. News #3; J. Emmel 1971 J. Res. Lepid. 9:238; B. Walsh 1975 Lepid. News #2 p. 3.
- 8 Sonoma County California, 1 June 1974, larva found on plant and reared to adult, J. Scott.
- 9 L. Jones 1951. An Annotated Checklist of the Macrolepidoptera of British Columbia. Ent. Soc. B.C. Occ. Papers. 1:1-148.
- 10 Alaska, K. Philip 1970 Lepid. News #3.
- 11 Anticosti Island, Quebec, W. Couper, cited by W. Edwards 1868-96. Butterflies of North America. Boston and N.Y.
- 12 Washington, E. Newcomer J. Lepid. Soc. 18:223; California, T. Emmel & J. Emmel J. Lepid. Soc. 28:345 and 16:32; Nevada, O. Shields et al. J. Res. Lepid. 8:32; Nevada, G. Austin J. Res. Lepid. 19:40; Colorado, Jefferson County, larva reared from plant, Tinytown 31 July 1978 J. Scott; Colorado, Jefferson Co., oviposition, Genesee Mountain 22 May 1980 J. Scott; Colorado, Larimer Co., Horsetooth Res., oviposition April 1977 David L. Wagner, oral comm.
- 13 John Emmel written communication.
- 14 Alberta, T. Bean 1893 Ent. News 4:220.
- 15 Yosemite California, T. Mead, in W. Edwards 1868-96. Butterflies of North America. Boston and N.Y.
- 16 San Jacinto Mountains, California, J. Emmel 1979 Lepid. News #2 p. 5; Yosemite Calif., H. Edwards, Proc. Calif. Acad. Sci. 5:161; California, F. Williams 1909 Ent. News 20:62, perhaps based on H. Edwards.
- 17 H. Tietz (1972, An Index to the Described Life Histories, Early Stages and Hosts of the Macrolepidoptera of U.S. and Canada, Allyn Museum) lists other hosts, which seem to be errors so are not listed.

kiyou Cos.) northward to Oregon-Washington and southeastern British Columbia east of the Cascades, east to Idaho, Montana, and northern Wyoming. New county records since those mapped by Ferris and Brown eds. (1981) are: Teton Co., Wyoming (probable, based on "American Museum Natural History records", Ferris, 1971); Chouteau Co., Montana (McMurtry Creek, Highwood Mountains, 14 Aug. 1966, 1 male, J. A. Scott; Highwood Mountains, 7 Aug. 1963, one female in University of Colorado museum whose dorsal hindwing resembles subspecies *progne* somewhat); Cascade Co., Montana, Harley Creek, Little Belt Mountains, 15 Aug. 1966, 2 males, J. Scott; Gallatin Co., Montana (T. Valente); Aldridge and Park Counties, Montana (Thomas Rogers); Mineral, Glacier, Ravalli, Deer Lodge, and Beaverhead Counties, Montana (Steven Kohler); Fremont Co., Idaho (Jon Shepard); Boise Co., Idaho (Manning and Nelson Curtis); Idaho Co., Idaho (record from Ray Stanford). *P. p. silenus* (type locality Portland, Oregon, Brown, 1967) seems limited to the Cascade Mountains from southwestern British Columbia to Oregon and possibly California (intermediate to *oreas* in coastal Mendocino Co., John Emmel, written communication). Northwestern Montana *P. p. progne* near *oreas* are most similar to *oreas* (the sexes are similar for instance), but are somewhat darker than California and central Montana *oreas* on the underside, indicating that some intergradation with *silenus* occurs from there west to southeastern British Columbia-eastern Washington and perhaps into eastern Oregon. True Cascades *silenus* are strikingly distinct, as noted in Table 1 and Figs. 1-2; adults near *oreas* are paler east of the Cascades including in eastern Washington (Jon Pelham, written communication). In central Montana, some *oreas* adults are somewhat similar to *progne* (the dorsal hindwing yellow submarginal spots and dorsal forewing median black spot in cell CuA_1 " Cu_1 " often small), presumably reflecting introgression from *progne* to the north and east. *P. p. progne* has recently been found in Rosebud Co., Montana (Ray Stanford).

I treat *oreas* as a subspecies of *progne* because they share identical genitalia, underside, larval pattern details (though the ground color of *progne* larvae differs somewhat and varies greatly), and gooseberry (*Ribes*) larval hostplants, and are barely allopatric, their ranges adjacent. *P. p. progne* extends northward from where *oreas* and *silenus* stop in southern British Columbia and extreme southwestern Alberta (*progne* occurs in central British Columbia and the Alberta plains northward to the Northwest Territories of Canada, east to eastern North America). The range of *progne* does not make ecological sense by itself, because it extends from Arkansas and North Carolina to the Northwest Territories, yet is absent from western U.S., where *oreas*, *silenus*, and *nigrozephyrus* replace it, existing over a greater range of rainfall (nearly 500 cm per year near Seattle, to 40 cm near Denver) than *progne*. *P. p. progne* does look

different from western *oreas* and *silenus*, but of course so also does *nigrozephyrus*, which heretofore was lumped into another species (*zephyrus*). The winter generation of *progne* lacks the broadly-black dorsal hindwing margin of summer generation *progne*. This leaves the size of the yellow submarginal dorsal hindwing spots and the size of the dorsal forewing median black spot in cell CuA_1 as the major differences between *progne* and *oreas*, characters which vary, especially in *oreas* (both characters) and *nigrozephyrus* (the latter character mainly, Fig. 1). It must be emphasized that *oreas* is intermediate between *progne* and *nigrozephyrus* in the former character, and intermediate between *progne* and *silenus* in the latter character. The relationship between *progne* and *oreas-silenus* may perhaps be clarified by further sampling where their ranges extend near each other, and noting whether the wing pattern intergrades; unfortunately *oreas* and *silenus* are uncommon, and large series do not exist. It should be noted that, until corroborated, the *P. silenus* record of Gibson (1920) from the Klotassin River area, Yukon, may be mislabeled, because *silenus* is otherwise unknown north of southern British Columbia, and *progne* is unknown from the Yukon as well. The specimen, an apparent female in the Canadian National Collection, is correctly identified, based on slides sent by J. Donald Lafontaine. Possibly *silenus* extends along the coast of British Columbia (where *progne* is absent) to Yukon, but proof is required.

Polygonia gracilis

P. gracilis gracilis and *P. g. zephyrus* are clearly subspecies. They intergrade broadly from Manitoba to Alaska (J. Donald Lafontaine notes this in adults in the Canadian National Collection, written communication), many series from Yukon for instance have variants resembling both subspecies and intermediates, and even southward to northern Washington and northern Montana some *gracilis* tendencies appear occasionally (the underside more two-toned). In Alberta, adults from Banff to Jasper in the mountains are usually intermediate (Norbert Kondla, written communication). See Table 1 for distinguishing characters.

Convergence and Competition between Species

Species of *Polygonia* show amazing examples of parallel variation (convergence). Form "umbrosa", in which the outer half of the dorsal hindwing is black, occurs in summer-generation adults of *Polygonia interrogationis*, *P. comma*, and *P. progne progne* in eastern North America, and eastern *P. gracilis gracilis* sometimes have a wider black margin as well. *Astercampa clyton* (Boisduval and LeConte) also has a black dorsal hindwing form in northeastern U.S., but not on the Gulf Coast or Arizona. Surely this "umbrosa" convergence is one of the major

puzzles about eastern U.S. butterflies, yet it has received almost no attention. The convergence explains why *P. p. progne* diverged in appearance away from *P. p. oreas*. In western North America, in contrast, both *P. progne nigrozephyrus* and *P. gracilis zephyrus* are pale on the same area of the wing (as is *P. satyrus*, which is widespread and common in western North America but limited in range and uncommon in eastern North America). Doubtfully mimicry, the convergences perhaps result from virus-transferred genes??

A related phenomenon may be the comparative abundance of the *Ribes*-feeding *Polygonia*. In eastern North America *P. gracilis gracilis* is usually uncommon, and *P. progne progne* is usually fairly common, whereas in western North America *P. gracilis* (and *zephyrus*) is usually common, and *P. progne* (*oreas*, *silenus*, *nigrozephyrus*) is nearly always uncommon to rare. The reason for this is not known; it doubtfully involves competition for larval food, which is generally common.

The available evidence further suggests there is no competition for larval food because larvae of *P. progne* prefer gooseberry, whereas *P. gracilis* larvae feed on currant (Table 2). "Gooseberry" (*Grossularia* Mill.) is a subgenus (a separate genus in Abrams, 1944) of *Ribes* L. which differs from "currants" in the flowers and stems. In *Grossularia* the pedicels are not jointed beneath the ovary (jointed in currants), the stems have spines at the nodes, and the calyx tube is always more than 2 mm long above the ovary (it varies in length in subgenus *Ribes*). Several currant species (*R. lacustre* (Pers.) Poir and *R. montigenum* McClatchie) do have spines on the twigs, but these have the calyx tube shorter than 2 mm; they are sometimes separated as the subgenus *Grossularioides* Jancz., the remaining spineless currants being subgenus *Ribes*. Noting in the table that all the *Ribes* hostplants of *P. progne* that are identified to species are gooseberries, *Grossularia*, one can conclude that *P. progne* (including *oreas* and *silenus*) larvae prefer gooseberry. In contrast, numerous records indicate that larvae of *P. gracilis* (including *zephyrus*) eat only currant. The next question to ask is: does the abundance of gooseberries versus currants in the various regions of North America have anything to do with the abundance of *P. progne* and *P. gracilis* subspecies? I cannot answer this question for all of North America, but there may be some correlation in Colorado, where *nigrozephyrus* is very rare west of Denver northward to Wyoming in the Front Range, where Wax Currant *Ribes cereum* is by far the commonest *Ribes*, but is slightly more numerous (uncommon) in Douglas and El Paso Counties and west of the continental divide, where gooseberry is common.

Adults of *P. progne* and *P. gracilis* feed on tree sap, rotten fruit, mud, and nectar of various flowers. *P. p. nigrozephyrus* adults fed on yellow *Chrysothamnus nauseosus* flowers in the fall (R. Klopshinske).

Synopsis

The following summarizes the names involved, including all other Nearctic *Polygonia*. Note that form names no longer are subject to the rules of nomenclature so that forms "umbrosa" and "silvius" are also applied to the same forms in species and subspecies other than those in which the forms were originally named, much as the names of genetic forms such as the A, B, and O blood groups are applied to chimpanzees as well as humans. The concept of *hylas* and *rusticus* has been changed to correspond with the wing pattern and hostplant variation within *P. faunus*. *P. comma* and *P. satyrus* have similar undersides, but are sympatric in Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia, Minnesota, Wisconsin, Michigan, and Maine, without known intermediates, though they may occur. Note the spelling of *interrogationis*, *neomarsyas*, and *c-argenteum*. The biological and morphological reasons for this arrangement are given further by Scott (1985).

- P. interrogationis* (Fabricius) 1798
 - = *fabricii* (W. H. Edwards) 1870 (winter adult)
 - Summer form *umbrosa* (Lintner) 1869
 - = *crameri* (Scudder) 1870
- P. comma* (Harris) 1842
 - = *harrisii* (W. H. Edwards) 1873 (winter adult)
 - Summer form *umbrosa* (same form as in *P. interrogationis*)
 - = *dryas* (W. H. Edwards) 1870 (summer adult)
- P. satyrus* (W. H. Edwards) 1869
 - = *chrysoptera* (W. G. Wright) 1905
 - = *neomarsyas* dos Passos 1969
 - = *hollandi* Gunder 1927
- P. progne* (Cramer) 1776 TL New York
 - a. *progne*
 - = *c-argenteum* (W. Kirby) 1837 TL 54°N, Cumberland House Saskatchewan (winter adult)
 - = *martineae* Coleman 1919 TL probably Connecticut
 - Summer form *umbrosa* (same form as in *P. interrogationis*)
 - = *l-argenteum* Scudder 1875 no TL (summer adult)
 - b. *oreas* (W. H. Edwards) 1869 TL Contra Costa Co., California
 - c. *silenus* (W. H. Edwards) 1870 TL Portland, Multnomah Co., Oregon
 - d. *nigrozephyrus* J. A. Scott 1984 TL Lump Gulch, Gilpin Co., Colorado, holotype University of Colorado museum
- P. gracilis* (Grote & Robinson) 1867 TL Mt. Washington N.H.
 - a. *gracilis*
 - b. *zephyrus* (W. H. Edwards) 1870 TL Virginia City, Storey Co., Nevada

- P. faunus* (W. H. Edwards) 1862 TL Hunter, Greene Co., New York
 a. *smythi* A. H. Clark 1937 TL Mt. Rogers, Grayson Co., Virginia
 b. *faunus*
 c. *hylas* (W. H. Edwards) 1872 TL Berthoud Pass, Clear Creek Co., Colorado (Saskatchewan-Alaska-Colorado-Oregon, small in size, underside gray, hostplants *Salix*, *Ribes*, etc.)
 = *arcticus* Leussler 1935 TL Black Mountain, near Aklavik, Northwest Territories
 Unspotted underside female form *silvius* (same form as in *rusticus*)
 = unspotted underside female form *orpheus* Cross 1936 TL Deer Creek Canyon, Jefferson Co., Colorado
 d. *rusticus* (W. H. Edwards) 1874 TL Big Trees, Calaveras Co., California (California only, larger in size, underside brownish-gray, hostplant *Rhododendron*)
 Unspotted underside female form *silvius* (W. H. Edwards) 1874 TL Yosemite Valley, Tuolumne Co., California

(The Eurasian relatives are of interest. The male genitalia of European *P. c-album* L. is like that of *P. progne* in all parts, except that the elbow of each gnathos is somewhat enlarged, more bulbous, in *c-album*. The gnathos and tegumen of European *P. egea* Cramer are like those of *P. progne* but the valva is much different. The *P. faunus* genitalia differs from that of *progne* in the gnathos and valva.)

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